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5/049/022
YANKEE MINE

Sunday, March 12, 2000



# Hazardous leftovers

## Cleanup of heavy metals from old mines in American Fork Canyon needed

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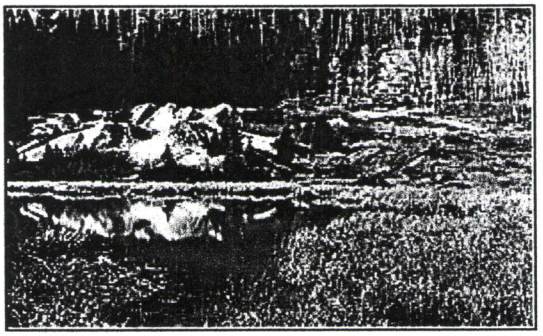
AMERICAN FORK CANYON, Utah County — There's still gold in them thar hills . . . and lead, copper, zinc, arsenic, iron and cadmium.

It's estimated there is as much as $1 million worth of usable metal and ore in the Pacific Mine alone in American Fork Canyon.

But it would cost $1.5 million to mine. And, meanwhile, the heavy metals are washing into mountain streams, threatening fish, wildlife and, perhaps, humans.



Water seeping through tailings from the old Pacific Mine in American Fork Canyon is endangering fish. Pacific Mine is the worst culprit, but more than 100 other old mines in the mountains are a hazard to the canyon environment.
*Photo courtesy U.S. Forest Service*

They are stirred up by all-terrain vehicles four-wheeling at the Pacific Mine site and thus sucked into human lungs.

Debris from the tailings from more than 100 abandoned mines in the north fork area above Tibble Fork Reservoir has already pushed the mineral content in the American Fork River beyond acceptable water quality limits.

Soil samples taken a year ago showed levels of lead in the Pacific Mine tailings, for instance, that measured 17,000 parts of lead content per million when the acceptable level for land where humans visit is only 10 parts per million.

"Use in that area is increasing," said Loyal Clark, a spokesman for the Uinta National Forest, "so we're concerned. We need to do something right away."

U.S. Forest Service officials have consequently called in a hazardous materials expert, Ted Fitzgerald, to conduct an expensive cleanup and

reclamation operation that's just a step below being classified as a Superfund site.

"We're looking at a major reclamation effort in the canyon," said Fitzgerald, on-scene coordinator for the American Fork Canyon Hazmat Project.

He said the effort was designated in 1993 by the Environmental Protection Agency as a Comprehensive Environmental Response, Compensation and Liability Inventoried Site.

"That's in the same category as a Superfund site," he said.

Fitzgerald said a renewed emphasis on the environment from President Clinton and those in charge of the nation's forests has pushed the project forward.

It's also legally necessary to comply with the stipulations in the Clean Water Act passed in 1972, he said.

"Yellow Boy" precipitate, from the Lower Bog Mine, is not far from the American Fork River.
*Photo courtesy U.S. Forest Service*

Targeted as the primary pollution sites are the Pacific Mine, the Globe Mine, the Bog Mines, the Yankee Mines and the area of Dutchman Flat. The Bog Mine soil samples show high levels of both lead and zinc. The Yankee Mines in the Mary Ellen Gulch area show a high level of both lead and zinc. The Pacific Mine showed a higher level of arsenic than recommended for human consumption, as well as lead, in four out of four fish tested.

But there are more than 100 known mines in the canyon north fork of the American Fork Mining District — mines left from an era that didn't yet recognize the need to protect fragile environments for future generations.

The Pacific Mine site is the worst offender, but the Globe Mine is located almost directly on the stream, the Bog Mines are not far, and the other mines are releasing effluent material including a precipitate composed of iron and copper known as "Yellow Boy" that is staining the nearby soil.

"It's good that it's here instead of into the stream," Fitzgerald said.

From 1871 to 1876, more than $2.5 million in gold, silver and various ores were taken from the canyon mines by early miners who made quick money on their claims.

The heyday was largely from 1870 through to 1912, with some renewed activity continuing into 1945.

Most serious mining stopped in the 1930s, although Fitzgerald said some mines are occasionally worked.

The metals, some of which are ground into fine grit by the milling process, wash out of the tailing piles and into the streams.

Tiny organisms — known as macroinvertebrates — then absorb the metals, some of which are toxic.

Since the macroinvertebrates are the main source of food for fish in the local water, the fish are left with less to eat and what they consume is heavily laced with metals.

Cutthroat and brown trout samples collected in August showed high concentrations of the metals, especially arsenic and lead.

Beaver dams on the river help some because the metals are collected by the natural compost. But when the streams and rivers run high, the metal components wash out and back into the water supply.

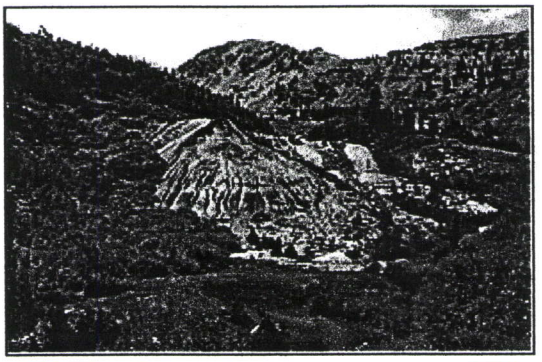
Fitzgerald said culinary water for the downstream communities is not affected, but ground water in the canyon is at risk and the situation is unhealthy overall for the canyon environment.

"Macroinvertebrates are one measure of an environment's health," he said.

Previous owners and operators of the various mines are ultimately responsible for the costs of cleanup, which could run into the hundreds of thousands of dollars.

Even the tailings on forest land or public property will be traced back to the mine of origin and the appropriate owner or operator will be billed where that's feasible.

Fitzgerald said responsible parties, including corporations and descendants of mine claimants, are currently being contacted and will be told what they'll be expected to do.



The Yankee Mines in Mary Ellen Gulch, with a high level of both lead and zinc, are among those with tailings that need to be cleaned up. The reclamation effort is expected to start within the next year.

*Photo courtesy U.S. Forest Service*

Affected governmental agencies, such as the Health Department, will be asked to join in to form a partnership to oversee the reclamation, Clark said.

The public will be further informed about the situation within the next couple of weeks and some restrictions may go into effect such as limiting the four-wheeler activity near some of the tailings. Public reaction will be measured and if needed, public hearings will be scheduled before reclamation begins.

The reclamation effort is expected to start within the next year and to be completed in October 2002.

The leaking piles will be isolated. A series of man-made "cells," or artificial wetlands, will be constructed below the tailings and designed to capture the silt and metal before it enters the mainstream.

"We're attempting to clean the water to water quality standards for cold water fisheries," Fitzgerald said. "That's attempting. We can't guarantee anything, but we have to stop the water from moving through the piles."

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